

July 21, 2014

REVISION 1



PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171 F 843.766.1178

www.gel.com

June 23, 2014

Mr. Scot Fitzgerald
CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Re: CHPRC F14-003
Work Order: 349925
SDG: GEL349925

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 04, 2014. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

A handwritten signature in cursive script that reads "Heather Shaffer".

Heather Shaffer
Project Manager

Purchase Order: 300071ES20
Chain of Custody: F14-003-176, F14-003-178, F14-003-180, F14-003-182 and F14-003-205
Enclosures



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Case Narrative

**General Narrative
for
Hanford MSA (51204)
CHPRC F14-003
SDG: GEL349925**

June 23, 2014

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on June 04, 2014, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative and DER.

Sample Identification

The laboratory received the following samples:

<u>Laboratory Identification</u>	<u>Sample Description</u>
349925001	B2W352
349925002	B2W356
349925003	B2W381
349925004	B2W354
349925005	B2W358

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: GC/MS Volatile, General Chemistry, Metals and Radiochemistry. This package, to the best of my knowledge, is in compliance with technical and administrative requirements.



Heather Shaffer
Project Manager

SAMPLE ISSUE RESOLUTION

SIR NUM SDR14-254
REV NUM 0
DATE INITIATED 7/11/2014

SAMPLE EVENT INFORMATION

SAF NUM(S) F14-003
OPERABLE UNIT(S)
PROJECT(S) 200 AREA SGRP
SAMPLE EVENT TITLE(S) 200-ZP-1 Remedial Action Wells
LABORATORY GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES 1
SAMPLE NUMBERS B2W354
SAMPLE MATRIX WATER
COLLECTION DATE 6/2/2014 - 6/2/2014
SDG NUM GEL349925

ISSUE BACKGROUND

CLASS Chain of Custody Issue (Field)
TYPE Other COC issue (Specify)
DESCRIPTION (COC# F14-003-178) – There is no signature in the 2nd received by box on p.8 for sample B2W354

DISPOSITION

DESCRIPTION PROPOSED DISPOSITION: Document the excursion, insert the SIR into the data package and close the SIR.

JUSTIFICATION ACCEPTED DISPOSITION: Accept the proposed resolution.

SUBMITTED BY: Kira Murray/CHPRC DATE: 7/11/14
 ACCEPTED BY: Susan Puckett/CHPRC DATE: 7/11/14

Chain of Custody and Supporting Documentation

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F14-003-176	PAGE 1 OF 1
COLLECTOR D. Brotherton	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C8786, F002 FTB 7/13/14	PROJECT DESIGNATION FY2014 200-ZP-1 Remedial Action Wells Sampling and Analysis - Water	FIELD LOGBOOK NO. HNF-N-504-28	SAF NO. F14-003	AIR QUALITY	
ICE CHEST NO. GWS-318	ACTUAL SAMPLE DEPTH 329.00 ft.	OFFSITE PROPERTY NO. 6.3.14	COA 302938ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC	SEE PTR 6.3.14	4835	BILL OF LADING/AIR BILL NO. SEE PTR 6.3.14 7701 8733 7552 KC 6.3.14		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/REMARKS *Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION HCl or H2SO4 to pH 2/cool 14 Days	HOLDING TIME	349925	
		TYPE OF CONTAINER 4			
		NO. OF CONTAINER(S) 4			
		VOLUME 40ml			
		SAMPLE ANALYSIS 8260_VOA_GCM S: COMMON; 8260_VOA_GCM S: CH 01;			
SPECIAL HANDLING AND/OR STORAGE					
SAMPLE NO. B2W352	MATRIX* WATER	SAMPLE DATE 6-2-14	SAMPLE TIME 0900		

CHAIN OF POSSESSION		SIGN / PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM D. Brotherton	DATE/TIME 6-2-14 1545	RECEIVED BY/STORED IN SSU-1	DATE/TIME 6/2/14 1545	** The CACN for all analytical work at WSCF laboratory is 403857.** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.** VOA analysis will be conducted with a 24 hour turnaround time on preliminary data. The VOA samples will be placed on a separate COC.** Cr VI holding times MUST BE MET. Sample Management Project Coordinator must be contacted immediately if there is a problem.** The laboratory is to report all TICs for Method 8260. TRVL-14-063	
RELINQUISHED BY/REMOVED FROM SSU-1	DATE/TIME JUN 03 2014	RECEIVED BY/STORED IN CHPRC	DATE/TIME JUN 03 2014		
RELINQUISHED BY/REMOVED FROM CHPRC	DATE/TIME JUN 03 2014	RECEIVED BY/STORED IN FED EX	DATE/TIME JUN 03 2014		
RELINQUISHED BY/REMOVED FROM FedEx	DATE/TIME JUN 03 2014	RECEIVED BY/STORED IN P. Mount Plateau Dent	DATE/TIME 6-4-14 0855		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-14-063	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	
PRINTED ON 5/5/2014					

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			PAGE 1 OF 1	
COLLECTOR D.W. Brotherton CHPRC	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days		
SAMPLING LOCATION C8786, FXR-3	PROJECT DESIGNATION FY2014 200-ZP-1 Remedial Action Wells Sampling and Analysis - Water	SAF NO. F14-003	AIR QUALITY <input type="checkbox"/>			
ICE CHEST NO. 605-318	FIELD LOGBOOK NO. 4835	COA 302938ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL		
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. 4835	BILL OF LADING/AIR BILL NO. -SEE PTR KC 6.3.14 770182337552 KC 6.3.14				
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Solid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WL=Wipe X=Other	PRESERVATION HCl or H2SO4 to pH <2/ Cool 14 Days	HOLDING TIME	AGS*			
POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	NO. OF CONTAINER(S) 4	VOLUME 40mL	856L VOA, GOM S: COMMON; 856L VOA, GOM S: CH 01;			
SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS					
SAMPLE NO. B2W381	MATRIX* WATER	SAMPLE DATE MAY 02 2014	SAMPLE TIME 1446	✓		
CHAIN OF POSSESSION		SIGN/ PRINT NAMES	DATE/TIME	SPECIAL INSTRUCTIONS		
REMOVED FROM CHPRC	REMOVED FROM CHPRC	RECEIVED BY/STORED IN SSU #1	DATE/TIME MAY 02 2014 1525	** The CACN for all analytical work at WSCF laboratory is 403857. ** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. ** VOA analysis will be conducted with a 24 hour turnaround time on preliminary data. The VOA samples will be placed on a separate COC. ** Cr VI holding times MUST BE MET. Sample Management Project Coordinator must be contacted immediately if there is a problem. ** The laboratory is to report all TICs for Method 8260. TRVL-14-063		
REMOVED FROM SSU-1	REMOVED FROM F.M. Hall	RECEIVED BY/STORED IN F.M. Hall	DATE/TIME JUN 03 2014 0730			
REMOVED FROM CHPRC	REMOVED FROM Fed EX	RECEIVED BY/STORED IN Fed EX	DATE/TIME JUN 03 2014 1400			
REMOVED FROM	REMOVED FROM	RECEIVED BY/STORED IN P. Went Kataric	DATE/TIME JUN 03 2014 0855			
REMOVED FROM	REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME	TRVL-14-063		
REMOVED FROM	REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME			
REMOVED FROM	REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME			
LABORATORY SECTION	RECEIVED BY	TITLE				
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY				
PRINTED ON 5/5/2014						

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F14-003-178	PAGE 1 OF 2
COLLECTOR <i>D. Brotherton</i>	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C8786, T-0027 TB N-504-28	PROJECT DESIGNATION FY2014 200-ZP-1 Remedial Action Wells Sampling and Analysis - Water		SAF NO. F14-003	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. 6205-318	FIELD LOGBOOK NO. ACTUAL SAMPLE DEPTH 329.00 ft.		COA 302938ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. REG-3.14 4835		BILL OF LADING/AIR BILL NO. -SEE PTR 1-2 6.3.14 7701 8233 7550-1c		7622 7550-1c 6.3.14
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION HNO3 to pH <2 Cool <=6C	HNO3 to pH <2	HNO3 to pH <2		
POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME 28 Days	6 Months	6 Months		
	TYPE OF CONTAINER G	G/P	G/P		
	NO. OF CONTAINER(S) 1	1	1		
	VOLUME 500mL	500mL	500mL		
SPECIAL HANDLING AND/OR STORAGE	7470 MERCURY (AQUEOUS)	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	9055 ANIONS, IC: COMMON (Nitrogen in Nitrate)	TRITIUM, DIST LSC, COMMON;	
SAMPLE NO. B2W354	MATRIX* WATER				
	SAMPLE DATE 6-24-14	SAMPLE TIME 0900			

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>D.B. Brotherton</i>	DATE/TIME 6-2-14 1545	RECEIVED BY/STORED IN <i>SSU #1</i>	DATE/TIME 6-2-14 1545	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>SSU #1</i>	DATE/TIME JUN 03 2014	RECEIVED BY/STORED IN <i>CHPRC</i>	DATE/TIME JUN 03 2014	TRVL-14-063	
RELINQUISHED BY/REMOVED FROM <i>F.M. Hall</i>	DATE/TIME JUN 03 2014	RECEIVED BY/STORED IN <i>FED EX</i>	DATE/TIME JUN 03 2014		
RELINQUISHED BY/REMOVED FROM <i>FedEx</i>	DATE/TIME JUN 03 2014	RECEIVED BY/STORED IN <i>P. Wentz</i>	DATE/TIME JUN 03 2014		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		
PRINTED ON 5/5/2014				A-6003-618 (REV 2)	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F14-003-178	PAGE 2 OF 2
COLLECTOR <i>Dwight Brotherton</i>	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C8786, F-002 FTB ICE CHEST NO. 6WS-318	PROJECT DESIGNATION FY2014 200-ZP-1 Remedial Action Wells Sampling and Analysis - Water	SAF NO. F14-003	SAF NO. F14-003	AIR QUALITY <input type="checkbox"/>	
	FIELD LOGBOOK NO. HWF-N-504-28	ACTUAL SAMPLE DEPTH 329.00ft	COA 302938ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. SEE PTR	4835	BILL OF LADING/AIR BILL NO. SEE PTR	7622 77018233	7622 7552 KC 6.3.14
SPECIAL INSTRUCTIONS ** The CACN for all analytical work at WSCF laboratory is 403857. ** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. ** VOA analysis will be conducted with a 24 hour turnaround time on preliminary data. The VOA samples will be placed on a separate COC. ** Cr-VI holding times MUST BE MET. Sample Management Project Coordinator must be contacted immediately if there is a problem. ** The laboratory is to report all TICs for Method 8260. TRVL-14-063 (1) 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Cobalt, Copper, Lead}; 6020_METALS_ICPMS: COMMON (Add-on) {Arsenic, Manganese, Nickel, Strontium, Uranium}; 6010_METALS_ICP: COMMON {Calcium, Iron, Vanadium};					
				TRVL-14-063	

A-6003-618 (REV 2)

PRINTED ON 5/5/2014

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		PAGE 1 OF 2	
COLLECTOR D.W. Brotherton CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	F14-003-182	PRICE CODE 7H
SAMPLING LOCATION C8786, I-003	PROJECT DESIGNATION FY2014 200-ZP-1 Remedial Action Wells Sampling and Analysis - Water	SAF NO. F14-003	AIR QUALITY	DATA TURNAROUND 30 Days / 30 Days	
ICE CHEST NO. C8DS-318	FIELD LOGBOOK NO. HNF-N-507-28	ACTUAL SAMPLE DEPTH 329.00 ft.	COA 302938ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. HNF-N-507-28	SEE PTR ke 6/3/14	BILL OF LADING/AIR BILL NO. 77018233		7622 6.3.14 KC
MATRIX* A=Air DL=Drum L=Liquid S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WE=Wipe X=Other	PRESERVATION HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2		
POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME 28 Days	28 Days/48 Hours	6 Months		
	TYPE OF CONTAINER G	G/P	G/P		
	NO. OF CONTAINER(S) 1	1	1		
	VOLUME 500mL	250mL	500mL		
SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS 7470 - MERCURY IC: COMMON (AQUEOUS); #	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	TC99, EIE, LSC, COMMON, LSC, COMMON, LSC		
SAMPLE NO. B2W358	MATRIX* WATER	SAMPLE DATE MAY 02 2014	SAMPLE TIME 1446		

June 15 6/12/14

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM D.W. Brotherton CHPRC	DATE/TIME JUNE 02 2014 1545	RECEIVED BY/STORED IN SSU-1	DATE/TIME JUN 03 2014 0730	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM P.M. Hill CHPRC	DATE/TIME JUN 03 2014 1400	RECEIVED BY/STORED IN FedEx	DATE/TIME JUN 03 2014 0855		
RELINQUISHED BY/REMOVED FROM CHPRC	DATE/TIME JUN 03 2014 0855	RECEIVED BY/STORED IN P. W. Dent FEDERIC Dent	DATE/TIME JUN 03 2014 0855		
RELINQUISHED BY/REMOVED FROM CHPRC	DATE/TIME JUN 03 2014 0855	RECEIVED BY/STORED IN CHPRC	DATE/TIME JUN 03 2014 0855		
RELINQUISHED BY/REMOVED FROM CHPRC	DATE/TIME JUN 03 2014 0855	RECEIVED BY/STORED IN CHPRC	DATE/TIME JUN 03 2014 0855		
RELINQUISHED BY/REMOVED FROM CHPRC	DATE/TIME JUN 03 2014 0855	RECEIVED BY/STORED IN CHPRC	DATE/TIME JUN 03 2014 0855		
RELINQUISHED BY/REMOVED FROM CHPRC	DATE/TIME JUN 03 2014 0855	RECEIVED BY/STORED IN CHPRC	DATE/TIME JUN 03 2014 0855		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		
PRINTED ON 5/5/2014					

TRVL-14-063

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F14-003-182	PAGE 2 OF 2
COLLECTOR	D.W. Brotherton CHPRC	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE	DATA TURNAROUND
SAMPLING LOCATION		PROJECT DESIGNATION	376-6427	TODAK, D	7H	30 Days / 30 Days
C8786, I-003		FY2014 200-ZP-1 Remedial Action Wells Sampling and Analysis - Water		SAF NO. F14-003	AIR QUALITY	<input type="checkbox"/>
ICE CHEST NO.	6105-318	FIELD LOGBOOK NO.	ACTUAL SAMPLE DEPTH	COA	METHOD OF SHIPMENT	ORIGINAL
SHIPPED TO		HNF-2-507-28	329.00 ft.	302938E510	FEDERAL EXPRESS	
GEL Laboratories, LLC		OFFSITE PROPERTY NO.	4835	BILL OF LADING/AIR BILL NO.		
		SEE PFR-7C 60314		SEE PFR-7C 60314		
<p>SPECIAL INSTRUCTIONS</p> <p>** The CACN for all analytical work at WSCF laboratory is 403857.** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.** VOA analysis will be conducted with a 24 hour turnaround time on preliminary data. The VOA samples will be placed on a separate COC.** Cr VI holding times MUST BE MET. Sample Management Project Coordinator must be contacted immediately if there is a problem.** The laboratory is to report all TICs for Method 8260. TRVL-14-063 (1) 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Cobalt, Copper, Lead}; 6020_METALS_ICPMS: COMMON (Add-on) {Arsenic, Manganese, Nickel, Strontium, Uranium}; 6010_METALS_ICP: COMMON {Calcium, Iron, Vanadium};</p>						
<p>TRVL-14-063</p>						

A-6003-618 (REV 2)

PRINTED ON 5/5/2014

SAMPLE RECEIPT & REVIEW FORM

Client: <u>HUSA</u>		SDG/AR/COC/Work Order: <u>350925/349941/319929/349937</u>	
Received By: <u>P. Dent</u>		Date Received: <u>6-4-14</u>	
Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>DC PM</u>
Classified Radioactive II or III by RSO?		<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		<input checked="" type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) <u>3c</u> *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>130462966</u>
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?			<input checked="" type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
7 Are Encore containers present?			<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
12 Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
14 Carrier and tracking number.	<input checked="" type="checkbox"/>			Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>7701 8233 7622</u> <u>7701 8233 7552</u> } <u>3c</u>

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DS Date 6/6/14 Page 1 of 1

Sample Issue Resolution

SAMPLE ISSUE RESOLUTION

SIR NUM SDR14-216
REV NUM 0
DATE INITIATED 6/12/2014

SAMPLE EVENT INFORMATION

SAF NUM(S) F14-003
OPERABLE UNIT(S)
PROJECT(S) 200 AREA SGRP
SAMPLE EVENT TITLE(S) 200-ZP-1 Remedial Action Wells
LABORATORY GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES 3
SAMPLE NUMBERS B2W356, B2W358, B2W381
SAMPLE MATRIX WATER
COLLECTION DATE 6/2/2014 - 6/2/2014
SDG NUM GEL349925

ISSUE BACKGROUND

CLASS Chain of Custody Issue (Field)
TYPE Incorrect Relinquish/Receipt Date/Time

DESCRIPTION The collection date for the above listed samples is stamped as MAY 02 2014 on the COC. The first relinquished date on the COC is also stamped as MAY 02 2014. Please confirm the correct collection date.

DISPOSITION

DESCRIPTION PROPOSED DISPOSITION: Please confirm the correct collection date. If samples were collected in May, they are out of holding. If samples were collected in June, please provide a revised COC.

JUSTIFICATION ACCEPTED DISPOSITION: The correct collection, first line relinquished and received dates should be June 2, 2014. Request that GEL correct the date on the original COCs to 6/2/14, initial and date corrections and insert the SIR into the data package.

SUBMITTED BY: Heather Shaffer/GEL DATE: 6/5/14
 ACCEPTED BY: Scot Fitzgerald/CHPRC DATE: 6/12/14

Direction for missed short duration hold times (less than 48 hours)

Subject: Direction for missed short duration hold times (less than 48 hours)

From: "Fitzgerald, Scot L" <Scot_L_Fitzgerald@rl.gov>

Date: 6/10/2014 1:39 PM

To: "Heather Shaffer (Heather.Shaffer@gel.com)" <Heather.Shaffer@gel.com>

CC: "Douglas, James G (Jim)" <James_G_Jim_Douglas@rl.gov>, "Baechler, Michael A" <Michael_A_Baechler@rl.gov>, "Champoux, Sara J" <Sara_J_Changpoux@rl.gov>, "Puckett, Susan" <Susan_Puckett@rl.gov>, "Waters-husted, Karen S" <Karen_S_Waters-husted@rl.gov>, "Ayres, Doris E" <Doris_E_Ayres@rl.gov>, "Fitzgerald, Scot L" <Scot_L_Fitzgerald@rl.gov>

Heather,

Please use the following guidance when dealing with short hold time methods.

It is expected that the laboratory will make every effort to meet regulatory hold times for all analysis performed for CHPRC. However, it is also recognized that shipping times can take up a significant portion of the time available for analyses having short (i.e. 48 hours or less) hold times. To this end, when the lab is unable to perform an analysis within the required hold time for methods having a hold time of 48 hours or less, the lab is directed to perform the analysis and note the missed hold time in the narrative. In addition, a statement summarizing the direction contained in this e-mail (or a copy of the e-mail itself) will be included in the narrative. This direction removes the need to initiate a SIR when the sample cannot be analyzed within the hold time but can be completed within 2X the hold time. For analysis performed outside 2X the hold time, the SIR process is still required.

Scot Fitzgerald
Analytical Support Group
Soil & Groundwater Remediation Project (S&GRP)
Phone: (509) 373-7495



Data Review Qualifier Definitions

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 (843) 556-8171

Report Date: 23-JUN-14

Project Specific Qualifier Definitions for GEL Client Code: HMSA

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol-condensation product	Y	Organics	Semi-Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H h flags. In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	Inorganics	Metals	Replaces J
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (Organics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely performed
T	Programmed	Spike and/or spike duplicate sample recovery is outside control limits.	Y	Organics		GC/MS only
W	Manual	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Y	Inorganics		No GFAA in house.
B	Programmed	The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample	Y	Radiological		
Y	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
+	Manual	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Y	Inorganics		
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	General Chemistry		Replaces J
C	Programmed	Target analyte was detected in the sample and the associated blank, and the sample concentration was ≤ 5 times the blank concentration.	Y	Inorganics	Metals	Replaces B
C	Programmed	Target analyte was detected in the sample and the associated blank, and the sample concentration was ≤ 5 times the blank concentration.	Y	General Chemistry		Replaces B
<	Programmed	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	Y	General Chemistry		for Reactive CN/S

Laboratory Certifications

List of current GEL Certifications as of 23 June 2014

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA130005
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122014-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-14-9
Utah NELAP	SC000122014-12
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

Volatile Analysis

Case Narrative

**ChemStation Case Narrative
Hanford MSA (HMSA)
SDG GEL349925**

Method/Analysis Information

Procedure: Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

Analytical Method: SW846 8260C

Analytical Batch Number: 1393186

Sample Analysis

The following client and quality control samples were analyzed to complete this SDG using the methods referenced in the Analysis Information section:

Sample ID	Client ID
349925001	B2W352
349925002	B2W356
349925003	B2W381
1203102020	Method Blank (MB)
1203102021	349925001(B2W352) Post Spike (PS)
1203102022	349925001(B2W352) Post Spike Duplicate (PSD)
1203102023	Laboratory Control Sample (LCS)
1203103053	Method Blank (MB)
1203103054	Laboratory Control Sample (LCS)
1203103055	Laboratory Control Sample Duplicate (LCSD)

NOTE: For volatile organic analyses the matrix spike designations may be indicated as "PS" or "PSD". The "PS" designation (post spike) indicates that the matrix was fortified prior to analysis but after applying any prep factors, such as a dilution. The laboratory considers the MS/MSD and PS/PSD designations interchangeable.

The samples in this SDG were analyzed on an "as received" basis.

Preparation/Analytical Method Verification**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-038 REV# 21.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP) section 19.1.2. False positive analytes are designated on the quantitation report with a 'd' qualifier.

Calibration Information

A complete list of the initial calibration data files with the correct dates and times of analysis are shown in the

Calibration History report located in the Standard Data section of the data package.

The surrogate compounds were calibrated using a minimum five-point calibration curve. The surrogates were added by the auto sampler at a concentration of 50 ug/L or 20 ug/L for low level analyses. GEL Laboratories LLC will not have surrogate recoveries reported for Dibromofluoromethane. This is due to increased regulations for this analyte and an industry shortage.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information**Blank (MB) Statement**

The blanks analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

Surrogate recoveries in all client and quality control samples were within the acceptance limits.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 349925001 (B2W352) was designated for spike analysis.

Matrix Spike (PS) Recovery Statement

The spike 1203102021 (B2W352) recoveries were not all within the acceptance limits. See the Data Exception Report in the miscellaneous section of the data package.

Matrix Spike Duplicate (PSD) Recovery Statement

The spike duplicate 1203102022 (B2W352) recoveries were not all within the acceptance limits. See the Data Exception Report in the miscellaneous section of the data package.

Relative Percent Difference (RPD) Statement

The RPDs between the matrix spike pair met the acceptance limits.

Internal Standard (ISTD) Acceptance

The internal standard responses in all client and quality control samples met the required acceptance criteria.

Technical Information**Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the ALPHALIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Sample Preservation and Integrity

All samples met the sample preservation and integrity requirements.

Sample Dilutions/Methanol Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

The following samples were analyzed for Chloromethane on an instrument which met method acceptance criteria for this compound: 349925001 (B2W352), 349925002 (B2W356) and 349925003 (B2W381).

Miscellaneous Information

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation

The following DERs were generated for this SDG: 1301449.

Manual Integrations

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

TIC Comment

Tentatively identified compounds (TIC) were requested for this sample delivery group/work order. Please note that non-requested target analytes that are reported on the quantitation reports will be present on the Form I. These detected analytes are included in the calibrated method and as a result will be reported on the Sample Data Summary (Form I) or Certificate of Analysis (C of A). TIC data are included on the Sample Data Summary (Form I).

Additional Comments

Additional comments were not required for this SDG.

Residual Chlorine

Residual Chlorine was not detected in any of the samples in this SDG.

System Configuration

The Volatile-GC/MS analysis was performed on the following instrument configuration:

The Volatile-GC/MS analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
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VOA3.I	Agilent 6890/5973 GC/MS w/ OI 4560/Archon Autosampler	HP6890/HP5973	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10
VOAA.I	Agilent 7890/5975 GC/MS w/ OI Eclipse/Archon Autosampler	HP7890A/HP5975C	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report
for**

HMSA001 Hanford MSA (51204)

Client SDG: GEL349925 GEL Work Order: 349925

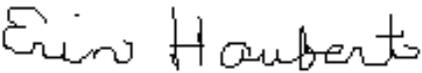
The Qualifiers in this report are defined as follows:

- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Erin Haubert

Date: 30 JUN 2014

Title: Data Validator

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC F14-003**

Report Date: June 10, 2014

Client Sample ID: B2W352
 Sample ID: 349925001
 Matrix: WATER
 Collect Date: 02-JUN-14 09:00
 Receive Date: 04-JUN-14
 Collector: Client
 Project: HMSA00152
 Client ID: HMSA001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics										
<i>8260VOA_GCMS: COMMON + CH 01 "As Received"</i>										
1,1,1-Trichloroethane	U	ND	0.300	5.00	ug/L	1	CDS1 06/04/14	1200	1393186	1
1,1,2,2-Tetrachloroethane	U	ND	0.300	5.00	ug/L	1				
1,1,2-Trichloroethane	U	ND	0.300	5.00	ug/L	1				
1,1-Dichloroethane	U	ND	0.300	10.0	ug/L	1				
1,1-Dichloroethylene	U	ND	0.300	10.0	ug/L	1				
1,2-Dichloroethane	U	ND	0.300	5.00	ug/L	1				
1,2-Dichloroethylene (total)	U	ND	0.300	10.0	ug/L	1				
1,2-Dichloropropane	U	ND	0.300	5.00	ug/L	1				
2-Butanone	TU	ND	3.00	10.0	ug/L	1				
2-Hexanone	TU	ND	3.00	20.0	ug/L	1				
4-Methyl-2-pentanone	U	ND	3.00	10.0	ug/L	1				
Acetone	TU	ND	3.00	20.0	ug/L	1				
Benzene	U	ND	0.300	5.00	ug/L	1				
Bromodichloromethane	U	ND	0.300	5.00	ug/L	1				
Bromoform	U	ND	0.300	5.00	ug/L	1				
Bromomethane	U	ND	0.300	10.0	ug/L	1				
Carbon disulfide	U	ND	1.60	10.0	ug/L	1				
Carbon tetrachloride	U	ND	0.300	5.00	ug/L	1				
Chlorobenzene	U	ND	0.300	5.00	ug/L	1				
Chloroethane	U	ND	0.300	10.0	ug/L	1				
Chloroform	U	ND	0.300	5.00	ug/L	1				
Dibromochloromethane	U	ND	0.300	5.00	ug/L	1				
Ethylbenzene	U	ND	0.300	5.00	ug/L	1				
Methylene chloride		7.33	1.60	5.00	ug/L	1				
Styrene	U	ND	0.300	5.00	ug/L	1				
Tetrachloroethylene	U	ND	0.300	5.00	ug/L	1				
Toluene	U	ND	0.300	5.00	ug/L	1				
Trichloroethene	U	ND	0.300	5.00	ug/L	1				
Vinyl chloride	U	ND	0.300	10.0	ug/L	1				
Xylenes (total)	U	ND	0.300	10.0	ug/L	1				
cis-1,3-Dichloropropylene	U	ND	0.300	5.00	ug/L	1				
trans-1,3-Dichloropropylene	U	ND	0.300	5.00	ug/L	1				
Chloromethane	U	ND	0.300	10.0	ug/L	1	JEB 06/04/14	1702	1393186	2

GEL LABORATORIES LLC

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC F14-003**

Report Date: June 10, 2014

Client Sample ID: B2W352 Project: HMSA00152
 Sample ID: 349925001 Client ID: HMSA001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Volatile Organics

8260VOA_GCMS: COMMON + CH 01 "As Received"

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	Date Time:
Bromofluorobenzene	46.1 ug/L	50.0	92.3	(80%-120%)	06/04/14 12 00
1,2-Dichloroethane-d4	49.5 ug/L	50.0	99.0	(78%-124%)	
Toluene-d8	51.3 ug/L	50.0	103	(80%-120%)	

Tentatively Identified Compound (TIC)	CAS No.	RT	Est. Concentration	Fit	Qual	Date Time:
unknown siloxane		15.764	7.39 ug/L	0	J	06/04/14 12 00
unknown siloxane		18.209	5.99 ug/L	0	J	

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	Date Time:
Bromofluorobenzene	48.4 ug/L	50.0	96.7	(80%-120%)	06/04/14 17 02
Toluene-d8	50.3 ug/L	50.0	101	(80%-120%)	
1,2-Dichloroethane-d4	54.3 ug/L	50.0	109	(78%-124%)	

Tentatively Identified Compound (TIC)	CAS No.	RT	Est. Concentration	Fit	Qual	Date Time:
						06/04/14 17 02

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260C	
2	SW846 8260C	

GEL LABORATORIES LLC

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC F14-003**

Report Date: June 10, 2014

Client Sample ID: B2W356
 Sample ID: 349925002
 Matrix: WATER
 Collect Date: 02-JUN-14 14:46
 Receive Date: 04-JUN-14
 Collector: Client
 Project: HMSA00152
 Client ID: HMSA001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics										
<i>8260VOA_GCMS: COMMON + CH 01 "As Received"</i>										
1,1,1-Trichloroethane	U	ND	0.300	5.00	ug/L	1	CDS1 06/04/14	1230	1393186	1
1,1,2,2-Tetrachloroethane	U	ND	0.300	5.00	ug/L	1				
1,1,2-Trichloroethane	U	ND	0.300	5.00	ug/L	1				
1,1-Dichloroethane	U	ND	0.300	10.0	ug/L	1				
1,1-Dichloroethylene	U	ND	0.300	10.0	ug/L	1				
1,2-Dichloroethane	U	ND	0.300	5.00	ug/L	1				
1,2-Dichloroethylene (total)	U	ND	0.300	10.0	ug/L	1				
1,2-Dichloropropane	U	ND	0.300	5.00	ug/L	1				
2-Butanone	TU	ND	3.00	10.0	ug/L	1				
2-Hexanone	TU	ND	3.00	20.0	ug/L	1				
4-Methyl-2-pentanone	U	ND	3.00	10.0	ug/L	1				
Acetone	TU	ND	3.00	20.0	ug/L	1				
Benzene	U	ND	0.300	5.00	ug/L	1				
Bromodichloromethane	U	ND	0.300	5.00	ug/L	1				
Bromoform	U	ND	0.300	5.00	ug/L	1				
Bromomethane	U	ND	0.300	10.0	ug/L	1				
Carbon disulfide	U	ND	1.60	10.0	ug/L	1				
Carbon tetrachloride		29.3	0.300	5.00	ug/L	1				
Chlorobenzene	U	ND	0.300	5.00	ug/L	1				
Chloroethane	U	ND	0.300	10.0	ug/L	1				
Chloroform	J	2.38	0.300	5.00	ug/L	1				
Dibromochloromethane	U	ND	0.300	5.00	ug/L	1				
Ethylbenzene	U	ND	0.300	5.00	ug/L	1				
Methylene chloride	U	ND	1.60	5.00	ug/L	1				
Styrene	U	ND	0.300	5.00	ug/L	1				
Tetrachloroethylene	U	ND	0.300	5.00	ug/L	1				
Toluene	J	0.460	0.300	5.00	ug/L	1				
Trichloroethene	U	ND	0.300	5.00	ug/L	1				
Vinyl chloride	U	ND	0.300	10.0	ug/L	1				
Xylenes (total)	U	ND	0.300	10.0	ug/L	1				
cis-1,3-Dichloropropylene	U	ND	0.300	5.00	ug/L	1				
trans-1,3-Dichloropropylene	U	ND	0.300	5.00	ug/L	1				
Chloromethane	U	ND	0.300	10.0	ug/L	1	JEB 06/04/14	1726	1393186	2

GEL LABORATORIES LLC

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC F14-003**

Report Date: June 10, 2014

Client Sample ID: B2W356 Project: HMSA00152
 Sample ID: 349925002 Client ID: HMSA001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Volatile Organics

8260VOA_GCMS: COMMON + CH 01 "As Received"

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	Date Time:
Bromofluorobenzene	46.4 ug/L	50.0	92.7	(80%-120%)	06/04/14 12 30
1,2-Dichloroethane-d4	48.6 ug/L	50.0	97.2	(78%-124%)	
Toluene-d8	51.1 ug/L	50.0	102	(80%-120%)	

Tentatively Identified Compound (TIC)	CAS No.	RT	Est. Concentration	Fit	Qual	Date Time:
unknown		4.521	5.1 ug/L	0	J	06/04/14 12 30

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	Date Time:
Bromofluorobenzene	48.0 ug/L	50.0	96.1	(80%-120%)	06/04/14 17 26
Toluene-d8	49.6 ug/L	50.0	99.3	(80%-120%)	
1,2-Dichloroethane-d4	54.2 ug/L	50.0	108	(78%-124%)	

Tentatively Identified Compound (TIC)	CAS No.	RT	Est. Concentration	Fit	Qual	Date Time:
						06/04/14 17 26

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260C	
2	SW846 8260C	

GEL LABORATORIES LLC

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC F14-003**

Report Date: June 10, 2014

Client Sample ID: B2W381
 Sample ID: 349925003
 Matrix: WATER
 Collect Date: 02-JUN-14 14:46
 Receive Date: 04-JUN-14
 Collector: Client
 Project: HMSA00152
 Client ID: HMSA001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics										
<i>8260VOA_GCMS: COMMON + CH 01 "As Received"</i>										
1,1,1-Trichloroethane	U	ND	0.300	5.00	ug/L	1	CDS1 06/04/14	1301	1393186	1
1,1,2,2-Tetrachloroethane	U	ND	0.300	5.00	ug/L	1				
1,1,2-Trichloroethane	U	ND	0.300	5.00	ug/L	1				
1,1-Dichloroethane	U	ND	0.300	10.0	ug/L	1				
1,1-Dichloroethylene	U	ND	0.300	10.0	ug/L	1				
1,2-Dichloroethane	U	ND	0.300	5.00	ug/L	1				
1,2-Dichloroethylene (total)	U	ND	0.300	10.0	ug/L	1				
1,2-Dichloropropane	U	ND	0.300	5.00	ug/L	1				
2-Butanone	TU	ND	3.00	10.0	ug/L	1				
2-Hexanone	TU	ND	3.00	20.0	ug/L	1				
4-Methyl-2-pentanone	U	ND	3.00	10.0	ug/L	1				
Acetone	TU	ND	3.00	20.0	ug/L	1				
Benzene	U	ND	0.300	5.00	ug/L	1				
Bromodichloromethane	U	ND	0.300	5.00	ug/L	1				
Bromoform	U	ND	0.300	5.00	ug/L	1				
Bromomethane	U	ND	0.300	10.0	ug/L	1				
Carbon disulfide	U	ND	1.60	10.0	ug/L	1				
Carbon tetrachloride	U	ND	0.300	5.00	ug/L	1				
Chlorobenzene	U	ND	0.300	5.00	ug/L	1				
Chloroethane	U	ND	0.300	10.0	ug/L	1				
Chloroform	U	ND	0.300	5.00	ug/L	1				
Dibromochloromethane	U	ND	0.300	5.00	ug/L	1				
Ethylbenzene	U	ND	0.300	5.00	ug/L	1				
Methylene chloride	U	ND	1.60	5.00	ug/L	1				
Styrene	U	ND	0.300	5.00	ug/L	1				
Tetrachloroethylene	U	ND	0.300	5.00	ug/L	1				
Toluene	U	ND	0.300	5.00	ug/L	1				
Trichloroethene	U	ND	0.300	5.00	ug/L	1				
Vinyl chloride	U	ND	0.300	10.0	ug/L	1				
Xylenes (total)	U	ND	0.300	10.0	ug/L	1				
cis-1,3-Dichloropropylene	U	ND	0.300	5.00	ug/L	1				
trans-1,3-Dichloropropylene	U	ND	0.300	5.00	ug/L	1				
Chloromethane	U	ND	0.300	10.0	ug/L	1	JEB 06/04/14	1825	1393186	2

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC F14-003**

Report Date: June 10, 2014

Client Sample ID: B2W381 Project: HMSA00152
 Sample ID: 349925003 Client ID: HMSA001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
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Volatile Organics

8260VOA_GCMS: COMMON + CH 01 "As Received"

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	Date Time:	06/04/14 13 01
Bromofluorobenzene	48.2 ug/L	50.0	96.3	(80%-120%)		
Toluene-d8	50.9 ug/L	50.0	102	(80%-120%)		
1,2-Dichloroethane-d4	52.1 ug/L	50.0	104	(78%-124%)		

Tentatively Identified Compound (TIC)	CAS No.	RT	Est. Concentration	Fit	Qual	Date Time:	06/04/14 13 01
unknown siloxane		15.764	6.69 ug/L	0	J		
unknown siloxane		18.209	6.18 ug/L	0	J		

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	Date Time:	06/04/14 18 25
Bromofluorobenzene	47.7 ug/L	50.0	95.4	(80%-120%)		
Toluene-d8	49.3 ug/L	50.0	98.7	(80%-120%)		
1,2-Dichloroethane-d4	53.2 ug/L	50.0	106	(78%-124%)		

Tentatively Identified Compound (TIC)	CAS No.	RT	Est. Concentration	Fit	Qual	Date Time:	06/04/14 18 25

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260C	
2	SW846 8260C	

Quality Control Summary

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QC Summary

Report Date: June 10, 2014

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CH2M Hill Plateau Remediation Company
 MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 349925

Parname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS										
Batch	1393186									
QC1203102023	LCS									
1,1,1-Trichloroethane	50.0		54.8	ug/L		110	(70%-130%)	CDS1	06/04/14	07:26
1,1,2,2-Tetrachloroethane	50.0		57.6	ug/L		115	(70%-130%)			
1,1,2-Trichloroethane	50.0		55.9	ug/L		112	(70%-130%)			
1,1-Dichloroethane	50.0		53.5	ug/L		107	(70%-130%)			
1,1-Dichloroethylene	50.0		54.0	ug/L		108	(70%-130%)			
1,2-Dichloroethane	50.0		48.1	ug/L		96.1	(70%-130%)			
1,2-Dichloroethylene (total)	100		105	ug/L		105	(70%-130%)			
1,2-Dichloropropane	50.0		53.4	ug/L		107	(70%-130%)			
2-Butanone	250		273	ug/L		109	(70%-130%)			
2-Hexanone	250		262	ug/L		105	(70%-130%)			
4-Methyl-2-pentanone	250		256	ug/L		102	(70%-130%)			
Acetone	250		276	ug/L		110	(70%-130%)			
Benzene	50.0		53.6	ug/L		107	(70%-130%)			
Bromodichloromethane	50.0		52.4	ug/L		105	(70%-130%)			
Bromoform	50.0		58.2	ug/L		116	(70%-130%)			
Bromomethane	50.0		48.3	ug/L		96.5	(70%-130%)			
Carbon disulfide	250		283	ug/L		113	(70%-130%)			
Carbon tetrachloride	50.0		52.3	ug/L		105	(70%-130%)			
Chlorobenzene	50.0		56.0	ug/L		112	(70%-130%)			
Chloroethane	50.0		47.9	ug/L		95.8	(70%-130%)			

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QC Summary

Workorder: 349925

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1393186										
Chloroform	50.0			51.9	ug/L		104	(70%-130%)	CDS1	06/04/14	07:26
Dibromochloromethane	50.0			58.3	ug/L		117	(70%-130%)			
Ethylbenzene	50.0			54.1	ug/L		108	(70%-130%)			
Methylene chloride	50.0			49.1	ug/L		98.2	(70%-130%)			
Styrene	50.0			52.6	ug/L		105	(70%-130%)			
Tetrachloroethylene	50.0			54.4	ug/L		109	(70%-130%)			
Toluene	50.0			56.8	ug/L		114	(70%-130%)			
Trichloroethene	50.0			55.2	ug/L		110	(70%-130%)			
Vinyl chloride	50.0			47.6	ug/L		95.1	(70%-130%)			
Xylenes (total)	150			159	ug/L		106	(70%-130%)			
cis-1,3-Dichloropropylene	50.0			55.0	ug/L		110	(70%-130%)			
trans-1,3-Dichloropropylene	50.0			55.5	ug/L		111	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			48.2	ug/L		96.5	(78%-124%)			
**Bromofluorobenzene	50.0			51.8	ug/L		104	(80%-120%)			
**Toluene-d8	50.0			52.7	ug/L		105	(80%-120%)			
QC1203103054	LCS										
Chloromethane	50.0			48.0	ug/L		96	(70%-130%)	JEB	06/04/14	14:10
**1,2-Dichloroethane-d4	50.0			55.6	ug/L		111	(78%-124%)			
**Bromofluorobenzene	50.0			47.8	ug/L		95.5	(80%-120%)			
**Toluene-d8	50.0			49.4	ug/L		98.8	(80%-120%)			
QC1203103055	LCSD										
Chloromethane	50.0			49.4	ug/L	2.84	98.7	(0%-20%)		06/04/14	14:35
**1,2-Dichloroethane-d4	50.0			55.5	ug/L		111	(78%-124%)			

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QC Summary

Workorder: 349925

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1393186										
**Bromofluorobenzene	50.0			48.9	ug/L		97.8	(80%-120%)	JEB	06/04/14	14:35
**Toluene-d8	50.0			51.0	ug/L		102	(80%-120%)			
QC1203102020 MB											
1,1,1-Trichloroethane			U	ND	ug/L				CDS1	06/04/14	08:27
1,1,2,2-Tetrachloroethane			U	ND	ug/L						
1,1,2-Trichloroethane			U	ND	ug/L						
1,1-Dichloroethane			U	ND	ug/L						
1,1-Dichloroethylene			U	ND	ug/L						
1,2-Dichloroethane			U	ND	ug/L						
1,2-Dichloroethylene (total)			U	ND	ug/L						
1,2-Dichloropropane			U	ND	ug/L						
2-Butanone			U	ND	ug/L						
2-Hexanone			U	ND	ug/L						
4-Methyl-2-pentanone			U	ND	ug/L						
Acetone			U	ND	ug/L						
Benzene			U	ND	ug/L						
Bromodichloromethane			U	ND	ug/L						
Bromoform			U	ND	ug/L						
Bromomethane			U	ND	ug/L						
Carbon disulfide			U	ND	ug/L						
Carbon tetrachloride			U	ND	ug/L						
Chlorobenzene			U	ND	ug/L						

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QC Summary

Workorder: 349925

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1393186										
Chloroethane			U	ND	ug/L				CDS1	06/04/14	08:27
Chloroform			U	ND	ug/L						
Dibromochloromethane			U	ND	ug/L						
Ethylbenzene			U	ND	ug/L						
Methylene chloride			U	ND	ug/L						
Styrene			U	ND	ug/L						
Tetrachloroethylene			U	ND	ug/L						
Toluene			U	ND	ug/L						
Trichloroethene			U	ND	ug/L						
Vinyl chloride			U	ND	ug/L						
Xylenes (total)			U	ND	ug/L						
cis-1,3-Dichloropropylene			U	ND	ug/L						
trans-1,3-Dichloropropylene			U	ND	ug/L						
**1,2-Dichloroethane-d4	50.0			51.1	ug/L		102	(78%-124%)			
**Bromofluorobenzene	50.0			48.2	ug/L		96.4	(80%-120%)			
**Toluene-d8	50.0			52.8	ug/L		106	(80%-120%)			
QC1203103053 MB											
Chloromethane			U	ND	ug/L				JEB	06/04/14	16:37
**1,2-Dichloroethane-d4	50.0			52.7	ug/L		105	(78%-124%)			
**Bromofluorobenzene	50.0			47.5	ug/L		95	(80%-120%)			
**Toluene-d8	50.0			49.8	ug/L		99.5	(80%-120%)			
QC1203102021 349925001 PS											
1,1,1-Trichloroethane	50.0	U	ND	54.4	ug/L		109	(70%-130%)	CDS1	06/04/14	17:40

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QC Summary

Workorder: 349925

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1393186										
1,1,2,2-Tetrachloroethane	50.0	U	ND	54.2	ug/L		108	(70%-130%)	CDS1	06/04/14	17:40
1,1,2-Trichloroethane	50.0	U	ND	52.0	ug/L		104	(70%-130%)			
1,1-Dichloroethane	50.0	U	ND	54.9	ug/L		110	(70%-130%)			
1,1-Dichloroethylene	50.0	U	ND	53.8	ug/L		108	(70%-130%)			
1,2-Dichloroethane	50.0	U	ND	48.3	ug/L		96.6	(70%-130%)			
1,2-Dichloroethylene (total)	100	U	ND	109	ug/L		109	(70%-130%)			
1,2-Dichloropropane	50.0	U	ND	52.1	ug/L		104	(70%-130%)			
2-Butanone	250	TU	ND T	153	ug/L		61.2*	(70%-130%)			
2-Hexanone	250	TU	ND	177	ug/L		70.7	(70%-130%)			
4-Methyl-2-pentanone	250	U	ND	236	ug/L		94.3	(70%-130%)			
Acetone	250	TU	ND T	107	ug/L		42.6*	(70%-130%)			
Benzene	50.0	U	ND	53.8	ug/L		108	(70%-130%)			
Bromodichloromethane	50.0	U	ND	51.9	ug/L		104	(70%-130%)			
Bromoform	50.0	U	ND	53.8	ug/L		108	(70%-130%)			
Bromomethane	50.0	U	ND	47.4	ug/L		94.9	(70%-130%)			
Carbon disulfide	250	U	ND	284	ug/L		114	(70%-130%)			
Carbon tetrachloride	50.0	U	ND	53.3	ug/L		107	(70%-130%)			
Chlorobenzene	50.0	U	ND	54.6	ug/L		109	(70%-130%)			
Chloroethane	50.0	U	ND	47.1	ug/L		94.2	(70%-130%)			
Chloroform	50.0	U	ND	51.7	ug/L		103	(70%-130%)			
Dibromochloromethane	50.0	U	ND	54.9	ug/L		110	(70%-130%)			

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QC Summary

Workorder: 349925

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1393186										
Ethylbenzene	50.0	U	ND	53.9	ug/L		108	(70%-130%)			
Methylene chloride	50.0		7.33	53.0	ug/L		91.4	(70%-130%)	CDS1	06/04/14	17:40
Styrene	50.0	U	ND	50.5	ug/L		101	(70%-130%)			
Tetrachloroethylene	50.0	U	ND	55.4	ug/L		111	(70%-130%)			
Toluene	50.0	U	ND	56.0	ug/L		112	(70%-130%)			
Trichloroethene	50.0	U	ND	55.3	ug/L		111	(70%-130%)			
Vinyl chloride	50.0	U	ND	48.2	ug/L		96.3	(70%-130%)			
Xylenes (total)	150	U	ND	159	ug/L		106	(70%-130%)			
cis-1,3-Dichloropropylene	50.0	U	ND	53.9	ug/L		108	(70%-130%)			
trans-1,3-Dichloropropylene	50.0	U	ND	50.8	ug/L		102	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		49.5	47.4	ug/L		94.7	(78%-124%)			
**Bromofluorobenzene	50.0		46.1	48.9	ug/L		97.8	(80%-120%)			
**Toluene-d8	50.0		51.3	49.4	ug/L		98.8	(80%-120%)			
QC1203102022 349925001 PSD											
1,1,1-Trichloroethane	50.0	U	ND	57.2	ug/L	5.16	114	(0%-20%)		06/04/14	18:11
1,1,2,2-Tetrachloroethane	50.0	U	ND	54.7	ug/L	0.973	109	(0%-20%)			
1,1,2-Trichloroethane	50.0	U	ND	52.5	ug/L	0.995	105	(0%-20%)			
1,1-Dichloroethane	50.0	U	ND	57.3	ug/L	4.38	115	(0%-20%)			
1,1-Dichloroethylene	50.0	U	ND	56.2	ug/L	4.40	112	(0%-20%)			
1,2-Dichloroethane	50.0	U	ND	48.3	ug/L	0.00	96.6	(0%-20%)			
1,2-Dichloroethylene (total)	100	U	ND	112	ug/L	3.17	112	(0%-20%)			
1,2-Dichloropropane	50.0	U	ND	55.6	ug/L	6.39	111	(0%-20%)			
2-Butanone	250	TU	ND	T 147	ug/L	4.27	58.6*	(0%-20%)			

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QC Summary

Workorder: 349925

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1393186										
2-Hexanone	250	TU	ND T	162	ug/L	8.78	64.8*	(0%-20%)	CDS1	06/04/14	18:11
4-Methyl-2-pentanone	250	U	ND	217	ug/L	8.19	86.9	(0%-20%)			
Acetone	250	TU	ND T	101	ug/L	5.55	40.3*	(0%-20%)			
Benzene	50.0	U	ND	55.5	ug/L	3.09	111	(0%-20%)			
Bromodichloromethane	50.0	U	ND	54.3	ug/L	4.43	109	(0%-20%)			
Bromoform	50.0	U	ND	54.2	ug/L	0.796	108	(0%-20%)			
Bromomethane	50.0	U	ND	51.4	ug/L	8.01	103	(0%-20%)			
Carbon disulfide	250	U	ND	297	ug/L	4.54	119	(0%-20%)			
Carbon tetrachloride	50.0	U	ND	55.2	ug/L	3.48	110	(0%-20%)			
Chlorobenzene	50.0	U	ND	55.2	ug/L	1.17	110	(0%-20%)			
Chloroethane	50.0	U	ND	48.8	ug/L	3.50	97.6	(0%-20%)			
Chloroform	50.0	U	ND	54.9	ug/L	5.93	110	(0%-20%)			
Dibromochloromethane	50.0	U	ND	55.3	ug/L	0.581	111	(0%-20%)			
Ethylbenzene	50.0	U	ND	54.5	ug/L	1.14	109	(0%-20%)			
Methylene chloride	50.0		7.33	54.9	ug/L	3.46	95.2	(0%-20%)			
Styrene	50.0	U	ND	52.0	ug/L	2.99	104	(0%-20%)			
Tetrachloroethylene	50.0	U	ND	55.5	ug/L	0.181	111	(0%-20%)			
Toluene	50.0	U	ND	57.0	ug/L	1.72	114	(0%-20%)			
Trichloroethene	50.0	U	ND	57.9	ug/L	4.57	116	(0%-20%)			
Vinyl chloride	50.0	U	ND	52.8	ug/L	9.15	106	(0%-20%)			
Xylenes (total)	150	U	ND	161	ug/L	1.10	107	(0%-20%)			

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QC Summary

Workorder: 349925

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1393186										
cis-1,3-Dichloropropylene	50.0	U	ND	56.5	ug/L	4.73	113	(0%-20%)			
trans-1,3-Dichloropropylene	50.0	U	ND	52.4	ug/L	3.22	105	(0%-20%)	CDS1	06/04/14	18:11
**1,2-Dichloroethane-d4	50.0			49.5	ug/L		96	(78%-124%)			
**Bromofluorobenzene	50.0			46.1	ug/L		103	(80%-120%)			
**Toluene-d8	50.0			51.3	ug/L		101	(80%-120%)			

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (Organics only)

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

GEL Laboratories LLC
Form GEL-DER

DER Report No.: 1301449
Revision No.: 1

DATA EXCEPTION REPORT			
Mo.Day Yr. 06-JUN-14	Division: Federal	Quality Criteria: SOP	Type: Process
Instrument Type: VOA GC/MS	Test / Method: 8260C	Matrix Type: Liquid	Client Code: HMSA001
Batch ID: 1393186	Sample Numbers: ALL		
Potentially affected work order(s)(SDG): 349925(GEL349925)			
Application Issues: Failed Recovery for MS/PS Failed Recovery for MSD/PSD			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. The recoveries for Acetone and 2-Butanone were outside of acceptance limits in the MS and in the MSD performed on sample 349925001. The recovery for 2-Hexanone was outside of acceptance limits in the MSD. The calculated relative percent difference between the MS and MSD were within acceptance limits for all spiked monitored compounds.</p>		<p>1. Narrate and report data.</p>	

Originator's Name:
Crystal Stacey 06-JUN-14

Data Validator/Group Leader:
Erin Haubert 06-JUN-14

Metals Analysis

Case Narrative

**Metals Fractional Narrative
Hanford MSA (HMSA)
SDG GEL349925**

Sample Analysis

Sample ID	Client ID
349925004	B2W354
349925005	B2W358
1203102600	Method Blank (MB) ICP
1203102601	Laboratory Control Sample (LCS)
1203102604	349941001(B2WJN8L) Serial Dilution (SD)
1203102602	349941001(B2WJN8S) Matrix Spike (MS)
1203102603	349941001(B2WJN8SD) Matrix Spike Duplicate (MSD)
1203102556	Method Blank (MB) ICP-MS
1203102557	Laboratory Control Sample (LCS)
1203102560	349929001(B2WM79L) Serial Dilution (SD)
1203102558	349929001(B2WM79S) Matrix Spike (MS)
1203102559	349929001(B2WM79SD) Matrix Spike Duplicate (MSD)
1203107491	Method Blank (MB) CVAA
1203107492	Laboratory Control Sample (LCS)
1203107505	349473001(B2WBD0L) Serial Dilution (SD)
1203107503	349473001(B2WBD0D) Sample Duplicate (DUP)
1203107504	349473001(B2WBD0S) Matrix Spike (MS)

The samples in this SDG were analyzed on an "as received" basis.

Method/Analysis Information

Analytical Batch:	1393413, 1393389 and 1395292
Prep Batch :	1393412, 1393388 and 1395290
Standard Operating Procedures:	GL-MA-E-013 REV# 22, GL-MA-E-006 REV# 10, GL-MA-E-014 REV# 25 and GL-MA-E-010 REV# 27
Analytical Method:	6010_METALS_ICP, 6020_METALS_ICPMS and 7470_HG_CVAA
Prep Method :	SW846 3005A and SW846 7470A Prep

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The Metals analysis-ICP was performed on a P E 5300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 0.4L/min, argon gas flows of 13 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

The Metals analysis - ICPMS was performed on a Perkin Elmer ELAN 9000 inductively coupled plasma mass spectrometer (ICP-MS). The instrument is equipped with a cross-flow nebulizer, quadrupole mass spectrometer, and dual mode electron multiplier detector. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum. Operating conditions are set at 1400W power and combined argon pressures of 360+/-7 kPa for the plasma and auxiliary gases, and 0.85 L/min carrier gas flow, and an initial lens voltage of 5.2.

The Metals analysis-Mercury was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-100) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 253.7 nm. Sample introduction through the flow injection system is performed via a peristaltic pump at 9 mL/min and nitrogen carrier gas rate of 80 mL/min.

Calibration Information

Instrument Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

CRDL/PQL Requirements

The CRDL/PQL standard recoveries met the referenced advisory control limits.

ICSA/ICSAB Statement

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blanks (CCB) Requirements

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following samples were selected as the quality control (QC) samples for this SDG: 349941001 (B2WJN8)-ICP, 349473001 (B2WBD0)-CVAA and 349929001 (B2WM79)-ICP-MS.

Matrix Spike (MS) Recovery Statement

The percent recoveries (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable analytes met the acceptance criteria.

Matrix Spike Duplicate (MSD) Recovery Statement

The percent recovery (%R) obtained from the MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable analytes met the acceptance criteria.

MS/MSD Relative Percent Difference (RPD) Statement

The relative percent difference (RPD) obtained from the designated matrix spike duplicate (MSD) is evaluated based on acceptance criteria of 20%. The RPD values between qualifying analyte results in the MS and MSD were within the acceptance limits.

Serial Dilution % Difference Statement

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations 25x the IDL/MDL for CVAA, 50X the IDL/MDL for ICP and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. Strontium did not meet the established percent difference criteria. 1203102560 (B2WM79)-ICP-MS.

Duplicate Relative Percent Difference (RPD) Statement

The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. All applicable analytes met these requirements.

Technical Information**Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. Sample was diluted to ensure that the strontium concentration was within the linear calibration range of the instrument. 349925005 (B2W358)-ICP-MS.

Preparation Information

The samples in this SDG were prepared exactly according to the cited SOP.

Miscellaneous Information**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. Data exception reports were included behind the Case Narrative or in the Miscellaneous Data section of this data package. A data exception report was not required for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Nick-Cole A. Elmore Date: 7.1.14

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report
for**

HMSA001 Hanford MSA (51204)

Client SDG: GEL349925 GEL Work Order: 349925

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Heather Shaffer.

Reviewed by

Nick-Cole A. Elmore 7.1.14

GEL LABORATORIES LLC

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC F14-003**

Report Date: June 30, 2014

Client Sample ID: B2W354
 Lab Sample ID: 349925004
 Matrix: WATER
 Collect Date: 02-JUN-14 09:00
 Receive Date: 04-JUN-14
 Collector: Client
 Project: HMSA00152
 Client ID: HMSA001
 Client SDG: GEL349925

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA												
<i>7470_MERCURY_CV: COMMON "As Received"</i>												
Mercury	U	ND	0.067	0.200	0.200	ug/L	1	NOR1	06/13/14	10:59	1395292	1
Metals Analysis-ICP												
<i>6010_METALS_ICP: COMMON (Ca, Fe, V) "As Received"</i>												
Calcium	U	ND	50.0	200	200	ug/L	1	HSC	06/26/14	16:26	1393413	2
Iron	U	ND	30.0	100	100	ug/L	1					
Vanadium	U	ND	1.00	5.00	5.00	ug/L	1					
Metals Analysis-ICP-MS												
<i>6020_METALS_ICPMS: COMMON + (add-on) "As Received"</i>												
Aluminum	U	ND	15.0	50.0	50.0	ug/L	1	PRB	06/28/14	00:11	1393389	3
Arsenic	U	ND	1.70	5.00	5.00	ug/L	1					
Barium	U	ND	0.600	2.00	2.00	ug/L	1					
Cadmium	U	ND	0.110	1.00	1.00	ug/L	1					
Chromium	U	ND	2.00	10.0	10.0	ug/L	1					
Cobalt	U	ND	0.100	1.00	1.00	ug/L	1					
Copper	U	ND	0.350	1.00	1.00	ug/L	1					
Lead	U	ND	0.500	2.00	2.00	ug/L	1					
Manganese	U	ND	1.00	5.00	5.00	ug/L	1					
Nickel	U	ND	0.500	2.00	2.00	ug/L	1					
Strontium	MU	ND	2.00	10.0	10.0	ug/L	1					
Uranium	U	ND	0.067	0.200	0.200	ug/L	1					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	KXP3	06/10/14	0915	1393388
SW846 3005A	SW846 3005A for 6010C	KXP3	06/10/14	0915	1393412
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	AXS5	06/12/14	1317	1395290

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	7470_HG_CVAA	
2	6010_METALS_ICP	
3	6020_METALS_ICPMS	

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC F14-003**

Report Date: June 30, 2014

Client Sample ID: B2W358
 Lab Sample ID: 349925005
 Matrix: WATER
 Collect Date: 02-JUN-14 14:46
 Receive Date: 04-JUN-14
 Collector: Client
 Project: HMSA00152
 Client ID: HMSA001
 Client SDG: GEL349925

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA												
<i>7470_MERCURY_CV: COMMON "As Received"</i>												
Mercury	U	ND	0.067	0.200	0.200	ug/L	1	NOR1	06/13/14	11:00	1395292	1
Metals Analysis-ICP												
<i>6010_METALS_ICP: COMMON (Ca, Fe, V) "As Received"</i>												
Calcium		61700	50.0	200	200	ug/L	1	HSC	06/26/14	16:30	1393413	2
Iron	B	56.2	30.0	100	100	ug/L	1					
Vanadium		16.0	1.00	5.00	5.00	ug/L	1					
Metals Analysis-ICP-MS												
<i>6020_METALS_ICPMS: COMMON + (add-on) "As Received"</i>												
Aluminum	U	ND	15.0	50.0	50.0	ug/L	1	PRB	06/28/14	00:18	1393389	3
Arsenic	U	ND	1.70	5.00	5.00	ug/L	1					
Barium		44.2	0.600	2.00	2.00	ug/L	1					
Cadmium	U	ND	0.110	1.00	1.00	ug/L	1					
Chromium	B	8.76	2.00	10.0	10.0	ug/L	1					
Cobalt	B	0.322	0.100	1.00	1.00	ug/L	1					
Copper	B	0.671	0.350	1.00	1.00	ug/L	1					
Lead	U	ND	0.500	2.00	2.00	ug/L	1					
Manganese		26.7	1.00	5.00	5.00	ug/L	1					
Nickel	B	1.04	0.500	2.00	2.00	ug/L	1					
Uranium		1.18	0.067	0.200	0.200	ug/L	1					
Strontium	DM	345	20.0	100	100	ug/L	10	PRB	06/28/14	16:21	1393389	4

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	KXP3	06/10/14	0915	1393388
SW846 3005A	SW846 3005A for 6010C	KXP3	06/10/14	0915	1393412
SW846 7470A Prep	EPA 7470A Mercury Prep Liquid	AXS5	06/12/14	1317	1395290

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	7470_HG_CVAA	
2	6010_METALS_ICP	
3	6020_METALS_ICPMS	

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: **CHPRC F14-003**

Report Date: June 30, 2014

Client Sample ID: B2W358
Lab Sample ID: 349925005

Project: HMSA00152
Client ID: HMSA001
Client SDG: GEL349925

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
4		6020_METALS_ICPMS										

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: June 30, 2014

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CH2MHill Plateau Remediation Company
 MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 349925

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1393389										
QC1203102557	LCS										
Aluminum	2000			2100	ug/L		105	(80%-120%)	PRB	06/27/14	23:51
Arsenic	50.0			46.4	ug/L		92.8	(80%-120%)			
Barium	50.0			50.1	ug/L		100	(80%-120%)			
Cadmium	50.0			51.7	ug/L		103	(80%-120%)			
Chromium	50.0			48.9	ug/L		97.8	(80%-120%)			
Cobalt	50.0			47.9	ug/L		95.9	(80%-120%)			
Copper	50.0			49.2	ug/L		98.5	(80%-120%)			
Lead	50.0			51.3	ug/L		103	(80%-120%)			
Manganese	50.0			51.9	ug/L		104	(80%-120%)			
Nickel	50.0			47.5	ug/L		95.1	(80%-120%)			
Strontium	50.0			52.4	ug/L		105	(80%-120%)			
Uranium	50.0			50.8	ug/L		102	(80%-120%)			
QC1203102556	MB										
Aluminum			U	ND	ug/L					06/27/14	23:44
Arsenic			U	ND	ug/L						
Barium			U	ND	ug/L						
Cadmium			B	0.139	ug/L						
Chromium			U	ND	ug/L						
Cobalt			U	ND	ug/L						
Copper			U	ND	ug/L						

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QC Summary

Workorder: 349925

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1393389										
Lead			U	ND	ug/L						
Manganese			U	ND	ug/L				PRB	06/27/14	23:44
Nickel			U	ND	ug/L						
Strontium			U	ND	ug/L						
Uranium			U	ND	ug/L						
QC1203102558 349929001 MS											
Aluminum	2000	U	ND	2100	ug/L		105	(75%-125%)		06/28/14	00:31
Arsenic	50.0		6.03	54.0	ug/L		95.9	(75%-125%)			
Barium	50.0		53.8	102	ug/L		96.4	(75%-125%)			
Cadmium	50.0	U	ND	51.9	ug/L		104	(75%-125%)			
Chromium	50.0		11.1	55.7	ug/L		89.2	(75%-125%)			
Cobalt	50.0	B	0.212	45.2	ug/L		89.9	(75%-125%)			
Copper	50.0		1.48	46.7	ug/L		90.5	(75%-125%)			
Lead	50.0	U	ND	48.8	ug/L		97.6	(75%-125%)			
Manganese	50.0	B	1.19	50.1	ug/L		97.8	(75%-125%)			
Nickel	50.0		3.98	48.2	ug/L		88.5	(75%-125%)			
Strontium	50.0		353	405	ug/L		N/A	(75%-125%)			
Uranium	50.0		2.65	53.4	ug/L		102	(75%-125%)			
QC1203102559 349929001 MSD											
Aluminum	2000	U	ND	2140	ug/L	2.21	107	(0%-20%)		06/28/14	00:38
Arsenic	50.0		6.03	51.8	ug/L	4.19	91.5	(0%-20%)			
Barium	50.0		53.8	101	ug/L	0.747	94.9	(0%-20%)			
Cadmium	50.0	U	ND	51.2	ug/L	1.41	102	(0%-20%)			
Chromium	50.0		11.1	58.6	ug/L	5.04	95	(0%-20%)			

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QC Summary

Workorder: 349925

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Parname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1393389										
Cobalt	50.0	B	0.212	46.3	ug/L	2.49	92.2	(0%-20%)	PRB	06/28/14	00:38
Copper	50.0		1.48	48.0	ug/L	2.60	93	(0%-20%)			
Lead	50.0	U	ND	48.5	ug/L	0.549	97	(0%-20%)			
Manganese	50.0	B	1.19	51.2	ug/L	2.16	100	(0%-20%)			
Nickel	50.0		3.98	49.1	ug/L	1.72	90.2	(0%-20%)			
Strontium	50.0		353	403	ug/L	0.512	N/A	(0%-20%)			
Uranium	50.0		2.65	51.8	ug/L	3.02	98.4	(0%-20%)			
QC1203102560 349929001 SDILT											
Aluminum		U	ND DU	ND	ug/L	N/A		(0%-10%)		06/28/14	00:51
Arsenic			6.03 DU	ND	ug/L	N/A		(0%-10%)			
Barium			53.8 D	11.2	ug/L	3.91		(0%-10%)			
Cadmium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Chromium			11.1 D	2.64	ug/L	19.1		(0%-10%)			
Cobalt		B	0.212 DU	ND	ug/L	N/A		(0%-10%)			
Copper			1.48 DU	ND	ug/L	N/A		(0%-10%)			
Lead		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Manganese		B	1.19 DU	ND	ug/L	N/A		(0%-10%)			
Nickel			3.98 D	0.861	ug/L	8.27		(0%-10%)			
Strontium			353 DM	60.6	ug/L	14.3*		(0%-10%)			
Uranium			2.65 D	0.519	ug/L	2.15		(0%-10%)			
Metals Analysis-ICP											
Batch	1393413										
QC1203102601 LCS											

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QC Summary

Workorder: 349925

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1393413										
Calcium	5000			5060	ug/L		101	(80%-120%)	HSC	06/26/14	16:23
Iron	5000			5220	ug/L		104	(80%-120%)			
Vanadium	500			534	ug/L		107	(80%-120%)			
QC1203102600	MB										
Calcium			U	ND	ug/L					06/26/14	16:19
Iron			U	ND	ug/L						
Vanadium			U	ND	ug/L						
QC1203102602	349941001 MS										
Calcium	5000	24600		29800	ug/L		N/A	(75%-125%)		06/26/14	17:18
Iron	5000	U	ND	5220	ug/L		104	(75%-125%)			
Vanadium	500	B	2.99	532	ug/L		106	(75%-125%)			
QC1203102603	349941001 MSD										
Calcium	5000	24600		29900	ug/L	0.396	N/A	(0%-20%)		06/26/14	17:21
Iron	5000	U	ND	5200	ug/L	0.274	104	(0%-20%)			
Vanadium	500	B	2.99	530	ug/L	0.450	105	(0%-20%)			
QC1203102604	349941001 SDILT										
Calcium		24600	D	5050	ug/L	2.68		(0%-10%)		06/26/14	17:25
Iron		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Vanadium		B	2.99 DU	ND	ug/L	N/A		(0%-10%)			
Metals Analysis-Mercury											
Batch	1395292										
QC1203107503	349473001 DUP										
Mercury		U	ND U	ND	ug/L	N/A			NOR1	06/13/14	09:38
QC1203107492	LCS										
Mercury	2.00			1.80	ug/L		89.9	(80%-120%)		06/13/14	09:24
QC1203107491	MB										
Mercury			U	ND	ug/L					06/13/14	09:22
QC1203107504	349473001 MS										

GEL LABORATORIES LLC

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QC Summary

Workorder: 349925

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-Mercury											
Batch	1395292										
Mercury	2.00	U	ND	2.05	ug/L		102	(75%-125%)		06/13/14	10:38
QC1203107505 349473001 SDILT											
Mercury		U	ND DU	ND	ug/L	N/A		(0%-10%)	NOR1	06/13/14	10:40

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank, and the sample concentration was <= 5 times the blank concentration.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

General Chem Analysis

Case Narrative

**General Chemistry Narrative
Hanford MSA (HMSA)
SDG GEL349925**

Method/Analysis Information

Product: Ion Chromatography

Analytical Batch: 1393185 **Method:** 9056_ANIONS_IC: COMMON (nitrate only)

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9056A:

Sample ID	Client ID
349925004	B2W354
349925005	B2W358
1203102014	Method Blank (MB)
1203102017	Laboratory Control Sample (LCS)
1203102127	349929015(B2WMH8) Sample Duplicate (DUP)
1203102128	349929015(B2WMH8) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV# 22.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Ion Chromatography analysis was performed on a Dionex ICS-5000 Ion Chromatograph.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information**Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 349929015 (B2WMH8).

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recoveries for this sample set were within the required acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

The following sample was received with insufficient time to prep and/or analyze within the remaining method-specified holding time. The sample was analyzed as soon as possible by the analyst. 349925004 (B2W354). Samples 1203102127 (B2WMH8) and 1203102128 (B2WMH8) were initially analyzed within holding; however, the holding times had expired prior to reanalysis of diluted samples.

Sample Dilutions

The following samples in this sample group were diluted due to high concentration: 1203102127 (B2WMH8), 1203102128 (B2WMH8) and 349925005 (B2W358).

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information**Data Exception (DER) Documentation**

The following DER was generated for this SDG: 1301247. 1203102127 (B2WMH8), 1203102128 (B2WMH8) and 349925004 (B2W354).

Manual Integrations

Manual integrations were not required for the samples in this SDG.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:  Date: 01 July 14

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis Report
for**

HMSA001 Hanford MSA (51204)

Client SDG: GEL349925 GEL Work Order: 349925

The Qualifiers in this report are defined as follows:

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

D Results are reported from a diluted aliquot of sample.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Heather Shaffer.

Reviewed by



GEL LABORATORIES LLC

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC F14-003**

Report Date: July 1, 2014

Client Sample ID: B2W354
 Lab Sample ID: 349925004
 Matrix: WATER
 Collect Date: 02-JUN-14 09:00
 Receive Date: 04-JUN-14
 Collector: Client
 Project: HMSA00152
 Client ID: HMSA001
 Client SDG: GEL349925

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
<i>9056_ANIONS_IC: COMMON (nitrate only) "As Received"</i>												
Nitrate-N	UX	ND	33.0	100	250	ug/L	1	DM	06/04/14	17:17	1393185	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9056A	

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC F14-003**

Report Date: July 1, 2014

Client Sample ID: B2W358
 Lab Sample ID: 349925005
 Matrix: WATER
 Collect Date: 02-JUN-14 14:46
 Receive Date: 04-JUN-14
 Collector: Client
 Project: HMSA00152
 Client ID: HMSA001
 Client SDG: GEL349925

Parameter	Qualifier	Result	MDL	RL	CRDL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
<i>9056_ANIONS_IC: COMMON (nitrate only) "As Received"</i>												
Nitrate-N	D	41600	660	2000	250	ug/L	20	DM	06/04/14	16:45	1393185	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9056A	

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: July 1, 2014

Page 1 of 1

CH2MHill Plateau Remediation Company
 MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 349925

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1393185										
QC1203102127	349929015	DUP									
Nitrate-N		DX	7200	DX	7030	ug/L	2.36	(0%-20%)	DM	06/05/14	14:51
QC1203102017	LCS										
Nitrate-N	2500				2620	ug/L		(90%-110%)		06/04/14	21:28
QC1203102014	MB										
Nitrate-N			U		ND	ug/L				06/04/14	20:57
QC1203102128	349929015	PS									
Nitrate-N	2.50	DX	0.360	DX	2.95	mg/L		(90%-110%)		06/05/14	15:23

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank, and the sample concentration was <= 5 times the blank concentration.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

GEL Laboratories LLC
Form GEL-DER

DER Report No.: 1301247
Revision No.: 1

DATA EXCEPTION REPORT			
Mo.Day Yr. 05-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: IC	Test / Method: SW846 9056A	Matrix Type: Liquid	Client Code: HMSA
Batch ID: 1393185	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349925(GEL349925),349929(GEL349929)			
Application Issues: Sample Analyzed out of Holding			
Specification and Requirements Exception Description:		DER Disposition:	
1. Sample Analyzed out of Holding: 349925 004 349929 012,015 QC 1203102127DUP,1203102128PS		1. Sample 349925004 (was) received with insufficient time to prep and/or analyze within the remaining method-specified holding time. The sample(s) (was) analyzed as soon as possible by the analyst. Samples 349929 012,015,1203102127DUP,1203102128PS initial runs were in holding, but the holding time had expired prior to diluted runs.	

Originator's Name:
Dustin Miller 05-JUN-14

Data Validator/Group Leader:
Thomas Lewis 01-JUL-14

Radiological Analysis

**Radiochemistry Case Narrative
Hanford MSA (HMSA)
SDG GEL349925
Work Order 349925**

Method/Analysis Information

Product: TRITIUM_DIST_LSC: COMMON
Analytical Method: TRITIUM_DIST_LSC
Analytical Batch Number: 1394707

Sample ID	Client ID
349925004	B2W354
349925005	B2W358
1203106004	Method Blank (MB)
1203106005	350316003(B2WCK3) Sample Duplicate (DUP)
1203106006	350316003(B2WCK3) Matrix Spike (MS)
1203106007	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 21.

Calibration Information:**Calibration Information**

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:**Blank Information**

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 350316003 (B2WCK3).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Samples were recounted due to a suspected blank false positive. The recounts are reported.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: TC99_EIE_LSC: COMMON
Analytical Method: TC99_EIE_LSC
Analytical Batch Number: 1394775

Sample ID	Client ID
349925004	B2W354
349925005	B2W358
1203106226	Method Blank (MB)
1203106227	349850001(B2WCW0) Sample Duplicate (DUP)
1203106228	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-059 REV# 2.

Calibration Information:**Calibration Information**

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:**Blank Information**

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 349850001 (B2WCW0).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Samples were recounted due to high recovery. The recounts are reported.

Miscellaneous Information:**Data Exception (DER) Documentation**

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report
for**

HMSA001 Hanford MSA (51204)

Client SDG: GEL349925 GEL Work Order: 349925

The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Heather McCarty

Date: 26 JUN 2014

Title: Analyst II

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Address : Company
 MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC F14-003

Report Date: June 26, 2014

Client Sample ID: B2W354 Project: HMSA00152
 Sample ID: 349925004 Client ID: HMSA001
 Matrix: WATER
 Collect Date: 02-JUN-14
 Receive Date: 04-JUN-14
 Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis													
<i>TC99_EIE_LSC: COMMON "As Received"</i>													
Technetium-99	U	-0.619	+/-4.28	7.45	+/-4.28	15.0	pCi/L		MYM	06/25/14	1824	1394775	1
<i>TRITIUM_DIST_LSC: COMMON "As Received"</i>													
Tritium	U	4.27	+/-51.9	95.4	+/-51.9	100	pCi/L		TYJ1	06/19/14	1001	1394707	2

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Tc-02-RC Modified
2	EPA 906.0 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Technetium-99m Tracer	TC99_EIE_LSC: COMMON "As Received"	1394775	98.8	(15%-125%)

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Address : Company
 MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352

Report Date: June 26, 2014

Contact: Mr. Scot Fitzgerald
 Project: CHPRC F14-003

Client Sample ID: B2W358
 Sample ID: 349925005
 Matrix: WATER
 Collect Date: 02-JUN-14
 Receive Date: 04-JUN-14
 Collector: Client

Project: HMSA00152
 Client ID: HMSA001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis													
<i>TC99_EIE_LSC: COMMON "As Received"</i>													
Technetium-99		133	+/-7.53	7.34	+/-16.6	15.0	pCi/L		MYM	06/25/14	1855	1394775	1
<i>TRITIUM_DIST_LSC: COMMON "As Received"</i>													
Tritium		459	+/-87.3	92.1	+/-125	100	pCi/L		TYJ1	06/19/14	1104	1394707	2

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Tc-02-RC Modified
2	EPA 906.0 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Technetium-99m Tracer	TC99_EIE_LSC: COMMON "As Received"	1394775	98.3	(15%-125%)

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Quality Control Data

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Client : CH2M Hill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 349925

Report Date: June 26, 2014
Page 1 of 2

Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch 1394707									
QC1203106004	MB								
Tritium			U	1.52	pCi/L			TYJ1	06/20/1414:45
				Uncert: +/-49.8					
				TPU: +/-49.8					
QC1203106005	350316003	DUP							
Tritium			838	818	pCi/L				06/20/1415:47
			Uncert: +/-110	+/-108		RPD: 2 (0% - 20%)			
			TPU: +/-196	+/-191		RER: 0.146 (0-2)			
QC1203106006	350316003	MS							
Tritium			1780	838	2600	pCi/L	REC: 99 (75%-125%)		06/20/1416:51
			Uncert: +/-110	+/-354					
			TPU: +/-196	+/-614					
QC1203106007	LCS								
Tritium			1780	1590	pCi/L	REC: 89 (80%-120%)			06/20/1417:08
			Uncert: +/-275						
			TPU: +/-412						
Batch 1394775									
QC1203106226	MB								
Technetium-99			U	-2.97	pCi/L			MYM1	06/26/1402:34
				Uncert: +/-4.05					
				TPU: +/-4.05					
QC1203106227	349850001	DUP							
Technetium-99			U	0.557	U	1.67	pCi/L		06/26/1403:06
			Uncert: +/-4.29	+/-4.22		RPD: 0 N/A			
			TPU: +/-4.29	+/-4.22		RER: 0.363 (0-2)			
QC1203106228	LCS								
Technetium-99			290	273	pCi/L	REC: 94 (80%-120%)			06/26/1403:37
			Uncert: +/-9.84						
			TPU: +/-31.8						

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- A The TIC is a suspected aldol-condensation product
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The analyte was detected in both the associated QC blank and in the sample.
- B The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
- C Analyte has been confirmed by GC/MS analysis

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QC Summary

Workorder: 349925

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
C										
D										
E										
E										
J										
M										
N										
P										
S										
T										
U										
W										
X										
Y										
Z										
o										

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

** Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.